PATENT ABSTRACTS OF JAPAN

(51)Int.Cl.   H04N 7/08
                               H04N 7/081
                               H04N 5/445

(54) TELEVISION BROADCAST METHODTELEVISION BROADCAST SYSTEMTELEVISION BROADCAST RECEPTION SYSTEMAND TELEVISION BROADCAST TRANSMISSION SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To realize the use of system as a catalog of broadcast programs without disturbing the viewing of program main information by using indirect codes that express the meanings of retrieval conditions independently of languages and the timesso as to test the similarity with respect to the television receiver that is capable of concurrently viewing both teletext and data broadcast.
SOLUTION: Program relevant information given by a program relevant information reception section 1 or a retrieval condition given by a retrieval condition entry section 6 is replaced with an indirect code that is expressed in a same space by using a proper code conversion table 5 at an indirect program relevant information generating section 2 or an indirect retrieval condition generating section 7 respectively independently of languagesa voice or the language of each country. Both the codes are compared by a similarity comparison arithmetic section 10 at a same distant scale via an indirect program relevant information storage section 3 and an indirect retrieval condition storage section 8. Thusa desired program is flexibly retrieved with respect to any entry.

CLAIMS

[Claim(s)]
[Claim 1]In television broadcasting which comprises program related information accompanying program main information and this program main informationAccording to a search condition which changed said program main information or program related information into indirect codes expressed in the same spaceand it was given by televiewer and changed into said indirect codes. A television broadcasting method being able to search and output similar program main information or program related information out of said broadcast program main information or program related information.
[Claim 2]A television broadcasting method according to claim 1 which carries out the feature of said program related information being transmitted per a scene of a television programor cut.
[Claim 3]A television broadcasting method according to claim 1 or 2 which carries out the feature of said program main information or program related information being television advertisement.
[Claim 4]A television broadcasting method according to any one of claims 1 to 3 searching and outputting other program information similar to program main information under broadcast as a search condition with program related information accompanying program main information under broadcast.
[Claim 5]A television broadcasting method according to any one of claims 1 to 4 outputting a result which measured similarity of a vocabulary contained in program main information or program related information of television broadcastingand a vocabulary given by televiewer as a search conditionand carried out permutation to high order of semantic similarity.
[Claim 6]A television set which receives television broadcastingA television broadcasting method according to any one of claims 1 to 5 characterized by having a remote control unit by which two-way communication is carried out to a main part of a television setand this receiver bodyand making it output said search results in said remote control unit.
[Claim 7]A means to transmit program related information accompanying program main information and this program main information as television broadcastingAccording to a search condition which it was given by a means and a televiewer who change said ***** information or program related information into indirect codes expressed in the same spaceand was changed into said indirect codes. A television broadcasting system which is provided with a means to search program main information or program related information similar out of said broadcast program main

information or program related informationand to outputand is characterized by things.

[Claim 8]The television broadcasting system according to claim 7wherein a transmitting station is provided with a means to change said program main information or program related information into indirect codes expressed in the same space.

[Claim 9]The television broadcasting system according to claim 7wherein a television set is provided with a means to change said program main information or program related information transmitted from a broadcasting station into indirect codes expressed in the same space.

[Claim 10]The television broadcasting system according to claim 9 which a television set is provided with a means to combine a memory measure of said program related informationa means to generate received program main information to program related informationsaid memorized program related informationand generated program related informationand is characterized by things.

[Claim 11]The television broadcasting system according to any one of claims 7 to 10wherein a television set is provided with a catalog preparing means by search of a television program as said transmitted program related informationand an output.

[Claim 12]The television broadcasting system according to any one of claims 7 to 10wherein a television set is provided with a catalog preparing means by search of television advertisement as said transmitted program related informationand an output.

[Claim 13]A means to change said program main informationprogram related informationor said search condition into indirect codes expressed in the same spaceThe television broadcasting system according to any one of claims 7 to 12 which is provided with a means to add data to a translation table and this table between a vocabulary of natural languageand indirect codes which express a meaning which said vocabulary has by an objective interval scale in differenceand is characterized by things.

[Claim 14]The television broadcasting system according to any one of claims 7 to 13wherein a means to change said program main informationprogram related informationor said search condition into indirect codes expressed in the same space contains a means to change a conversion parameter used for conversion accommodative.

[Claim 15]The television broadcasting system according to claim 14wherein changes of a meaning that a means of a vocabulary contained in said program related information and a search condition to change said conversion parameter accommodative is timeor antique are included as

consideration conditions.

[Claim 16]The television broadcasting system comprising according to any one of claims 7 to 15:
A vocabulary by which a means to search program main information or program related information similar out of said broadcast program main information or program related informationand to output is contained in program main information or program related information of television broadcasting.
A means to measure similarity with a vocabulary given by televiewer as a search condition.

[Claim 17]A television broadcasting receiving system comprising:
A means to input a search condition used for search from a televiewer including a receiver of television broadcasting transmitted including program related information accompanying program main information and this program main information.
A means to change said program main informationprogram related informationor said search condition into indirect codes expressed in the same space.
A means to search program main information or program related information similar out of said broadcast program main information or program related informationand to output according to a search condition changed into said indirect codes.

[Claim 18]The television broadcasting receiving system according to claim 17 which a means to change said search condition into indirect codes expressed in the same space has a conversion function corresponding to each languageand is characterized by things.
[Claim 19]A character input means according [a means to input said search condition] to a keyboard and handwritingA voice input means by utterance or pronunciation using a vessela photographor an image input means by a handwriting illustrationA means to change into indirect codes expressed in said same spaceincluding two or more sorts of meanssuch as a gesture input means by a gesture gesture etc.The television broadcasting receiving system according to claim 17 or 18 which has a function which changes into the same indirect codes to said each of input meansand carries out the feature of the things.
[Claim 20]The television broadcasting receiving system according to claim 17 which is provided with a remote control unit characterized by comprising the followingand carries out the feature of the things.
A means to input said search condition.

An information output means which shows a televiewer information.
A bidirectional cable which dissociates from a receiver body and operates or a wireless communication meansand an information output means which displays a result of program related information and program retrieving by two-way communication.

[Claim 21]A means to change program related information accompanying program main information or this program main information into indirect codes expressed in the same space as a search condition which is given by televiewer and used for searchA television broadcasting transmission system which is provided with a means to transmit said program main information or program related information this changedand is characterized by things.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention about the main program of the television broadcasting broadcast on radio or a cable. Grant/sending out of the program related information used in order to searchrecord or look through a main program are performedIt is related with the television broadcasting method of performing the purposessuch as said searchusing the sent-out program related informationa television broadcasting systema television broadcasting receiving systemand a television broadcasting transmission system.
[0002]
[Description of the Prior Art]When using programs including television broadcasting conventionallya means to choose from these main programs the information made into the purposeBy using the magazine publishing a newspaper or a program columnand a computer terminal in parallelwhen the televiewer itself gives directions manually to a broadcasting receiver for search resultssearch results are reflected.
[0003]The broadcast to which the electronic program guide which serves as program related information in the television broadcasting by a communications satellite was attached is madeand functional unification of the search using this as to-be-examined funiculus data and a channel selection is possible. As a means to choose a desired program in the broadcast to which this program related information attachesSearch the program related information displayed by a tabular format etc. so that

it may be indicated to JP3-284077AorPerform narrowing retrieval of the program which carries out the indicating input of time of onsetend timeor a program title of broadcastetc. clearlyand suits directionsorThe method of performing narrowing retrieval for every program type using the genre code beforehand given from the broadcasting station side is mentioned so that it may be indicated to JP3-88159Abut when all carry out the direct valuation of the vocabulary contained in program related informationsearch of the main program is performed.

[0004]The output of program main information is changed like a teletext receiving set like JP9-51512A as a presenting means of the searched resultAn onscreen display which is reduced or suspendedand it changesand a display is madeis piled up on program main informationor is piled up by the shape of translucentand is displayed is made.

[0005]In the technical field which performs electronic-filing-document search on a computer apart from search of a programAs an indirect retrieval system which considers that it is indicated by the meaning of a search condition to JP7-85006Acombination while [word] are registered into a thesaurus dictionary or a thesaurus dictionary is expressed using dignityand there is search technique which gives pliability to a search condition.

[0006]

[Problem(s) to be Solved by the Invention]The number of main programs broadcast by mediasuch as television and radionow is hugeand the manufacture in which television advertisement (CM) exceeds every year in 10000 kindsfor example only in addition to the program which a broadcasting station serves as a subject and manufactures as an object of viewing and listening or search is made.

[0007]Since the retrieval object is increasing increasingly by diversification of transmission linessuch as television broadcasting by the broadcasting satellite or a communications satelliteThe search from a huge mother set is required of the search for which a televiewer acquires the target main program out of a program and which is performed for accumulatingand all the search which used the independent search system arranged in parallel in a broadcasting system will become very difficult.

[0008]Although an electronic program guide system attaches program related information to program main information and serves as a foundation in which all the electronic search is possibleThe direct word as which the electronic program guide itself expresses a programa texttime informationaccounting informationetc. give the information which coded this directlyand do not give solution of a concrete search

means.

[0009]In the program retrieval device given to a broadcasting receiver in order to use the present electronic program guide. the meaning and outline which are included in a main program about the main program for which a televiewer asks -- an ambiguous expression (language.) or the expression technique which human being can have in addition to languagessuch as musica graphic displayand a gesture-- containing -- there being no means to perform un-deterministic similar retrievaland by specifying indirectlyRecollecting and specifying the vocabulary directly contained in an electronic program guide requires a serious laborsuch as repeating trial and error of search condition selection of how often.

[0010]When the flexible search means which tells such a meaning is providedin what each of the method of expressing program related information like before and a retrieval device is independently advocated asthe degree of adaptability of search obtained cannot but become insufficient.

[0011]Although existence of the indirect search technique using the thesaurus dictionary used in the field of a computer as a flexible retrieval method on the other hand is mentionedthe indirect search between the words by which the connection between class words became a huge quantity in order to give pliability sufficient with such artand connection was not made is impossible. In the method which expresses combination between the words which improved this point using the dignity of continuous quantitya connection matrix increases exponentially about the number of wordsand presses processing speed and a storage capacity.

[0012]Although a retrieval object document is narrowed down and there is also a technique using a specialized dictionary as the technique of reducing a connection matrixin the program which deals with the information on various fields integrativethe fall of search capability is causedestablishing the selecting means of a dictionary spoils a sex the instancy to search of informationand the momentary retrieval required recollected by real time by the broadcast which subject changes one after another and goes cannot be coped with promptly.

[0013]Also when adding a new wordcorrelation with the word conventionally registered into the dictionary is added to the thesaurus of each word to which a dictionary corresponds conventionallythe work which updates the whole dictionary is neededand the problem which cannot be performed in difference also has registration of a new word.

[0014]In the broadcasting medium which has a color of the occasional fashion stronglyIn order to receive strongly the influence of changes of

the meaning which the fashion itself and a vocabulary havewhen the televiewer at the time specifies a search condition with the vocabulary of the language used every day thenthere are many possibilities of using different semantic vocabularies from program related informationand this problem cannot be solved in the direct search which performs keyword collation etc. The correspondence to a vogue word etc. is difficult also for the indirect search using a thesaurus dictionary.

[0015]In the program manufactured overseassince using language differs fundamentallysaid problem and the same problem are assumedFor exampleit is unreal to draw up individually all the thesaurus dictionaries of spacing of each countryand since the time and effort of the broadcasting station which actually broadcasts manufacturing the program guide in Japanese is neededchange of the meaning by translation cannot be preventedeither.

[0016]In CM which bears a role of announcement means commercial most effective originally these pose an important problem especially. Even when interest of liking to know the information beyond the information as which CM is expressed in the time limit given to CM is able to be evoked into a televiewerSince a broadcast schedule is not indicated like a broadcasting station manufacture program and broadcast times cannot be expected to the information retrieval which the way a televiewer conducts a follow-up survey on that spot is not givenand a televiewer performs activelyit is difficult for the target information to come to hand. Even if it can express the classification of the target information semanticallyCM search of goodsserviceetc. which cannot direct a trade namea manufacture nameetc. correctly reaches to an extreme of difficulty further.

[0017]Although program retrieving is processed within a receiver and a retrieving person is shown the display of a result using the image display which a receiver hasIn this caseare interruptedcover the flow of the program main information which is main informationor it not only breaks down picture achievingbutSince a sex is lost instancy even if acquiring becomes impossible about the program main information broadcast during discontinuation of program main information or it performs ***** using a secondary memory meansin the event (vote [of quiz]application of present) program for which it depends to time stronglya disadvantage is remarkably given to a televiewer.

[0018]
[Means for Solving the Problem]In television broadcasting which the invention according to claim 1 becomes from program related information accompanying program main information and this program main

informationAccording to a search condition which changed said program main information or program related information into indirect codes expressed in the same spaceand it was given by televiewer and changed into said indirect codes. It is the television broadcasting method characterized by searching similar program main information or program related informationand making it output it out of said broadcast program main information or program related information.

[0019]The invention according to claim 2 is the television broadcasting method according to claim 1 which carries out the feature of said program related information being transmitted per a scene of a television programor cut.

[0020]The invention according to claim 3 is the television broadcasting method according to claim 1 or 2 which carries out the feature of said program main information or program related information being television advertisement.

[0021]The invention according to claim 4 is the television broadcasting method according to any one of claims 1 to 3 searching and outputting other program information similar to program main information under broadcast as a search condition with program related information accompanying program main information under broadcast.

[0022]A vocabulary by which the invention according to claim 5 is included in program main information or program related information of television broadcastingSimilarity with a vocabulary given by televiewer as a search condition is measuredand it is the television broadcasting method according to any one of claims 1 to 4 outputting a result which carried out permutation to high order of semantic similarity.

[0023]A television set in which the invention according to claim 6 receives television broadcastingIt is the television broadcasting method given in claims 1 thru/or 5 characterized by having a remote control unit by which two-way communication is carried out to a main part of a television receiverand this main part of a receiving setand making it output said search results in said remote control unit.

[0024]A means by which the invention according to claim 7 transmits program related information accompanying program main information and this program main information as television broadcastingAccording to a search condition which it was given by a means and a televiewer who change said ***** information or program related information into indirect codes expressed in the same spaceand was changed by said indirect codes. It is a television broadcasting system which is provided with a means to search program main information or program related information similar out of said broadcast program main information or

program related informationand to outputand is characterized by things.

[0025]The invention according to claim 8 is the television broadcasting system according to claim 7wherein a transmitting station is provided with a means to change said program main information or program related information into indirect codes expressed in the same space.

[0026]The invention according to claim 9 is the television broadcasting system according to claim 7wherein a television receiver is provided with a means to change said program main information or program related information transmitted from a broadcasting station into indirect codes expressed in the same space.

[0027]The invention according to claim 10 a television receiverIt is the television broadcasting system according to claim 9 which is provided with a means to combine a means to generate program related informationsaid memorized program related informationand generated program related informationand is characterized by things from a memory measure and received program main information of said program related information.

[0028]The invention according to claim 11 is the television broadcasting system according to any one of claims 7 to 10wherein a television receiver is provided with a catalog preparing means by search of a television program as said transmitted program related informationand an output.

[0029]The invention according to claim 12 is the television broadcasting system according to any one of claims 7 to 10wherein a television receiver is provided with a catalog preparing means by search of television advertisement as said transmitted program related informationand an output.

[0030]A means by which the invention according to claim 13 changes said program main informationprogram related informationor said search condition into indirect codes expressed in the same spaceIt is the television broadcasting system according to any one of claims 7 to 12 which is provided with a means to add data to a translation table and this table between a vocabulary of natural languageand indirect codes which express a meaning which said vocabulary has by an objective interval scale in differenceand is characterized by things.

[0031]A means by which the invention according to claim 14 changes said program main informationprogram related informationor said search condition into indirect codes expressed in the same spaceIt is the television broadcasting system according to any one of claims 7 to 12 containing a means to change a conversion parameter used for conversion accommodative.

[0032]A means by which the invention according to claim 15 changes said conversion parameter accommodative is the television broadcasting system according to claim 14wherein changes of a time or antique meaning of a vocabulary included in said program related information and a search condition are included as consideration conditions.

[0033]A means for the invention according to claim 16 to search program main information or program related information similar out of said broadcast program main information or program related informationand to outputIt is the television broadcasting system according to any one of claims 7 to 15 provided with a means to measure similarity of a vocabulary contained in program main information or program related information of television broadcastingand a vocabulary given by televiewer as a search condition.

[0034]A means to input a search condition which uses the invention according to claim 17 for search from a televiewer including a receiver of television broadcasting transmitted including program related information accompanying program main information and this program main informationAccording to a means to change said program main informationprogram related informationor said search condition into indirect codes expressed in the same spaceand a search condition changed into said indirect codes. It is a television broadcasting receiving system which is provided with a means to search program main information or program related information similar out of said broadcast program main information or program related informationand to outputand is characterized by things.

[0035]A means by which the invention according to claim 18 changes said search condition into indirect codes expressed in the same space has a conversion function corresponding to each languageand is the television broadcasting receiving system according to claim 17 characterized by things.

[0036]A means by which the invention according to claim 19 inputs said search conditionA voice input means by keyboarda character input means by handwritingutteranceor pronunciation using a vesselTwo or more sorts of meanssuch as a gesture input means by photograph or image input means by a handwriting illustrationa gesture gestureetc.are includedA means to change into indirect codes expressed in said same space has a function which changes into the same indirect codes to said each of input meansand is the television broadcasting receiving system according to claim 17 which carries out the feature of the things.

[0037]A means by which the invention according to claim 20 inputs said search conditionand an information output means which shows a televiewer

informationIt is the television broadcasting receiving system according to claim 17 which is provided with a remote control unit which has a bidirectional cable which dissociates from a main part of a receiving setand operates or a wireless communication meansand an information output means which displays a result of program related information and program retrieving by two-way communicationand carries out the feature of the things.

[0038]A means to change into indirect codes expressed in the same space as a search condition which the invention according to claim 21 is given program related information accompanying program main information or this program main information by televiewerand is used for searchIt is a television broadcasting transmission system which is provided with a means to transmit said program main information or program related information this changedand is characterized by things.

[0039]

[Embodiment of the Invention]Hereafterthe example of this invention is described in detail using a drawing.

[0040](Example 1) Drawing 1 shows the example of an important section block configuration of the television set which realizes this invention.

[0041]Firstthe program main information which the broadcast information received with the receiver turns into from an image and a soundSeparating into the program related information which described time of onsetend timea performera photographing locationprogram main pointor an outline of the program relevant to program main informationetc.each is inputted into the program main information receive section 11 and the program-related-information receive section 11and gets over (decoding). After the program related information to which it restored (decoding) is changed into indirect codes by the indirect program-related-information preparing part 2referring to the code translation table 5it is once stored in the indirect program-related-information storage parts store 3.

[0042]A televiewer inputs the search condition of the program retrieving meant by the search condition input section 6. The inputted search condition is changed into an indirect search condition with reference to the code translation table 5 like the case of said program related information in the indirect search condition preparing part 7. The changed indirect search condition is memorized by the indirect search condition storage parts store 8and the permutation of program related information is performed according to the similarity obtained in the similarity comparison-operation part 10referring to this.

[0043]Herethe code translation table 5 describes the conversion rule or

conversion parameter for changing into the indirect codes expressed in the same spaceand can use it in common in various kinds of television methods.

[0044]A televiewer does the direct entry of the search condition by the search condition input section 6and also it is possible for the image synchronizer 13 to select what is equivalent to a program during viewing and listeningand to carry out a designation input instead of a search condition by specifying the program under viewing and listeningfrom the program related information held at the program-related-information latch part 9.

[0045]On the other handprogram main information is inputted into the display control part 14 in order to perform the usual program displayand it is once saved at the program main information latch part 12. When program retrieving is performed to the past broadcastthe image synchronizer 13 carries out the permutation of the program main information currently held at the program main information latch part 12 based on the permutation result obtained by the similarity comparison-operation part 10and outputs it to the display control part 14. When applying program retrieving for future broadcastthe image synchronizer 13 incorporates program main information from the program main information receive section 11 directlyadds program related information required for the program applicable to the search results obtained from the similarity comparison-operation part 10and sends it to the display control part 14. Thusafter the suitable screen layout according to a retrieving person's demand and information selection processing are performed by the display control part 14a televiewer is shown the result of the program retrieving and the permutation which were obtained by the indicator 15.

[0046]It explains still in detail about the method of similarity assay using indirect codes.

[0047]Hereit is intelligible and the example which made goods CM of imagination program main information is given. Drawing 2 "4 The example of program related information of the text form attached to CM of a passenger car called ********** is shown. Such program-related-information data is outputted by the program-related-information receive section 1 with the television set of drawing 1. In the indirect program information preparing part 2this is first decomposed into the meaning of a passage piece of a sememe. Conversion to indirect codes is performed with projecting each piece of a sememe obtained above on interim semantic space with an integrative ideography system with reference to the code translation table 5. In the case of drawing 2the indirect codes

which each piece of a sememe takes take the vector form expressed with Vn like the "context vector" shown in "the associative retrieval from a large scale database" published by Institute of ElectronicsInformation and Communication Engineers ********* A192-99 (1993-1)The whole meaning of a passage of program related information is this Vn. It is expressed by peace combination.

[0048]Since it is easythe case where only the 1st sentence of drawing 2 is given as program related information is considered. Drawing 3 shows the example of the code translation table which described the conversion rule between the word under natural language used for searchand the indirect codes arranged on single interim semantic space. The indirect codes given to program related information (in this casethe piece of a sememe "RV") when the code translation table illustrated to drawing 3 is used are $V_{sum}(1) = sigma V_n = V_1 = (00180400590220)$ (1).

It can express. Indirect-codes $V_{sum}(2)$ which shows this meaning when the piece of a sememe a "sedan" is given to another program related information is $V_{sum}(2) = (00110400900005)$.

(2)

It becomes. Indirect-codes V_{ref} of the search condition given when the program retrieving in the keyword a "family" was directed by the televiewer to these two program-related-information counties is $V_{ref} = (00061020490200)$ (3).

It becomes.

[0049]Since the vector of each indirect codes has spatial physical relationship as typically shown in drawing 6the similarity of a search condition and program related information is evaluated with the distance between these vectors. In drawing 6a search conditionthe program related information of similarity with M2 [high]and M3 show the low program related information of similarity M1. It is possible to use the absolute value of the difference of the vector in coordinates space or the inner product of both vectors for the interval scale between vectors. When estimated by the difference absolute value of a vector $|V_{sum}(1) - V_{ref}|^2 = 0^2 + 0^2 + 1^2 + 2^2 + (-1)^2 + 4^2 + (-2)^2 + 0^2 + 1^2 + 0^2 + 0^2 + 0^2 + (-2)^2 + 0^2 = 31$ (4)

$|V_{sum}(2) - V_{ref}|^2 = 0^2 + 0^2 + 1^2 + (-5)^2 + (-1)^2 + 4^2 + (-2)^2 + 0^2 + 5^2 + (-9)^2 + 0^2 + (-2)^2 + 0^2 + 5^2 = 180$ (5)

When a next door and an indirect-codes system are rectangular seat table systemsthey are normalization numerals of $V_{sum}(n)$.

$v_{sum}(n) = normalize \{V_{sum}(n)\}$ (6)

Normalization numerals of V_{ref}

$v_{ref} = normalize (V_{ref})$ (7)

The value of ******-1 $\leq (v_{sum}(n) - v_{ref}) \leq 1$ can compare similarity.

[0050]
$v_{sum}(1) - v_{ref} = (V_{sum}(1) - V_{ref}) / (|V_{sum}(1)| |V_{ref}|)$
$= 153/(14.0 \times 11.9)$
$= 0.918 \quad (8)$
$v_{sum}(2) - v_{ref} = (V_{sum}(2) - V_{ref}) / (|V_{sum}(2)| |V_{ref}|)$
$= 42/(11.1 \times 11.9)$
$= 0.318 \quad (9)$
$V_{sum}(1)$ which are a candidate with a distance value small in the former and a candidate with a small (an inner product is large) angle which two vectors accomplish in the latter is shown to a televiewer as primacy search results so that it may turn out that a formula (4)(5)or the formula (8) and (9) is compared.

[0051]That isthe televiewer can perform suitable program retrieving only by giving the search condition which meant not specifying a type-of-a-car vehicle name clearlybut also using ** with a "family"And since it is shown sequentially from more suitable "RV" as compared with a "sedan" in useinformation presentation intelligible for a user can be performed.

[0052]This assay method becomes effective especiallywhen description of a request sentence or program related information exists in large quantities [it is long and / a retrieval object]. In the case of the conventional system using a thesaurus dictionarythe entry of a dictionary 10000 wordsAlso in a simple keyword comparisonthe number of times of the addition which affects a throughput most when 20 pieces of a sememe applicable to the entry in a dictionary exist in 1 program related informationand performing an electronic operation is the minimum. Although 20 words [-dimensional / 10000 / x] = no less than 200000 times are neededSince it is built after merging the semantic element which overlaps between entries in the case of indirect codes and deciding upon the expression coordinates type near direct coordinates as much as possible beforehandIt is clear to become a number of entries (thesaurus numerals number of dimension) >> indirect-codes number of dimensionand since it is possible to express a semantic coordinate system larger than the numerals using a thesaurus dictionaryit is possible to acquire the evaluation accuracy of the similarity more than equivalent only in the addition of the number of dimension of indirect codes at worst.

[0053]As mentioned abovealthough drawing 3 shows an example of the code translation table 5 of drawing 1the same table does not need to be used for this code translation table 5 by the indirect program information preparing part 2 and the indirect search condition preparing part 7and it should just be expressed on the same interim semantic space

(indirect-codes space).

[0054]That iseven when the lexical language used for program related information differs from the lexical language used for a search conditioncomparison of similarity is possible if even the semantic relation of both lexical languages can be expressed. For exampledrawing 4 is an example of a foreign language and the example of a conversion code table at the time of taking into consideration that the televiewer using English searches the program related information described in Japanese in English every day is shown. When an individual case explainsat words of Japanese originthere are no perfect synonymous words equivalent to the word called "RV" (/**-******///*******-******* -comingetc.)but the English idiom "multi-purpose vehicle" is mentioned as a class word. Since the indirect codes which contained the semantic common appearance with "RV" in the meaning called the "use" and "purpose" are given when "purpose" contained in this performs adaptation corresponding to Englisheven if language is differentit becomes possible to perform semantic search from a synonym.

[0055]Since it is possible for it to be expressed by the indirect codes same in a "family" and "family" mostly in agreement otherwiseor to express a code translation table appropriatelywithout [extension /] breaking the difference of the nuance between languages using indirect codes if adaptation is carried outThere is no time and effort which rewrites program related information frequently with languageand the search means which can carry out adaptation to search in any languages is provided.

[0056]It is possible to deal also with the appearance of a sudden word and aging of language by fashion by parameter adaptation-ization.

[0057]Drawing 5 explains the example of adaptation processing of a conversion parameter (translation table). Firstsince vogue words can be collectively managed by the broadcasting station sidefor example in addition of an unknown wordthe difference dictionary data for adaptation is sent to drawing 1 at the parameter adaptation-ized part 4 of each receiver of a graphic display using broadcast or communication. The parameter adaptation-ized part 4 performs unknown word addition of drawing 5 using the received difference information.

[0058]When it can perform only by the adding processing of perfect difference since indirect codes are usedand same processing is carried out to the semantic retrieval device using a thesaurus dictionaryA class word item is selected out of all the items of an entryand in order to update the connection relations of a class word to all the itemsupdating over the whole dictionary is needed. Even if the reliability of the

whole dictionary is not affected even when received data are missing accidentallyand in the case of this example which adds difference an update process carries out abnormal termination with a certain obstacleand it does not perform attached processing special to a conventional dictionary parent or memory storagethere is an advantage which can always save the state before updating.

[0059]It is realizable when adaptation in aging also uses the same processor fundamentally.

[0060]For exampleif change like the adaptation processing explained by drawing 5 is added to the code translation table 5 of drawing 1Since the search results which always suited the time to the keyword a "family" appear on a higher rank even when the mainstream of the private passenger car enjoyed with a family changes in the "RV" mold from a "sedan" mold by fashionAn always suitable retrieval object is shown only by searching with expression in case the retrieving person itself hasfeelingand a concept. If a part for a parameter deviation is transmitted when bundling up by the broadcasting station side and performing dictionary managementas it can realize only by the parameter operation of an applicable item and the additional example of the unknown word also described the actually performed adaptation processingin the terminal sideadaptation is realizable only by substitution processing. Although it is necessary to perform search-and-replace operation of the whole dictionary about the item of the "sedan" registered into the synonym in the conventional system using a thesaurus dictionaryif only the indirect codes expressing the meaning of a "sedan" are updatedthe adaptation which incorporates aging easily is possible for the case of this example.

[0061]The flexible search beyond the genre division with which the use device of the conventional electronic program guide was provided is attained by having such similarity assay.

[0062](Example 2) setting Example 2 to the similarity evaluation of program related information and a search condition -- respectively -- moreover -- yeswhen it is given by the text whether it is a gapsimilarity assay is performed in consideration of the starting receptacle of a text.

[0063]In drawing 1by the indirect program information preparing part 2the syntax of the program related information first acquired from the program-related-information receive section 1 is analyzedand the permutation of the V_n shown in drawing 2 is carried out with starting receptacle relations based on the result of syntax analysis. The semantic category which carries out the neighborhood in [between

program related information and a search condition] meaning of a passage moreover is matchedand distance is authorized for every semantic category.

[0064]Drawing 7 explains the relation between the indirect codes at the time of taking the context into considerationrequires an arrowand shows receptacle relations. A search conditionthe program related information of similarity with M2 and M12and M3 and M13 are the low program related information of similarity M1 and M11. [high] If it is a fixed form sentence search inputcan consider how to perform a pair of search which compares distance on the syntax tree fixed to topology cullbut. the minimum starting receptacle element (before it happens [following a noun phrasean inflection for concluding a sentencea conjunctive particlea sentence-final particleetc.].) in order to raise flexibility After dividing into the semantic category (it is intelligible when it thinks that it mainly becomes per clause) containing every one clause containing an adnominal verban adjectiveand one adjective verbThe group which performs similarity comparison by the semantic categories by the side of these days is createdand the method of performing distance assay with each indirect-codes V_n and V_{ref} within each class is taken.

[0065]The method using DP (dynamic programming) matching for which matching of the indirect codes compared within each category group is generally used by pattern recognitionsuch as speech recognitionis held. The path planning in the DP matching in this case is corner point immobilizationand since mounting of very simple and a low throughput is possibleeven if it compares with the processing which asks for total of indirect codesits cost does not increase substantially. Comparison of the distance between vectors uses the difference absolute value of a vectorthe inner product of a normalization vectoretc.and is performed as stated to Example 1.

[0066]By having such similarity assayspecification of a detailed search condition is easily attained using the text to which it is used every day.

[0067](Example 3) Example 3 explains the example of catalog use of a television program.

[0068]In this casethe video-signal synchronizer (catalog preparing part) 13 of drawing 1 not only operates as an image synchronizer which quotes program main information based on the comparison result of the similarity outputted from the similarity comparison-operation part 10butIt operates as a catalog preparing part which performs catalog plastic surgery of the image using required program main information. The screen-display image in the case of using television advertisement

(CM) for an example as a shopping catalog is shown in drawing 8. Drawing 8 is an example of CM catalog which doubled and displayed the program main information A which carried out reductionand the searched program related information B in the indicator 15 of drawing 1.

[0069]Catalog value is newly produced to television broadcasting by looking through freely CM which adjoins only one dimension only with time permutation conventionally in the form according to a televiewer's demandand it becomes possible to acquire the more detailed information only about intended CM by presentation of program related information. Although the example shows shopping catalog use of CMthe catalog use with the same said of the usual broadcasting station work program is attainedand it becomes possible to subscribe to a favorite programsubjecta sceneand a cut by catalogizing subject with a televiewer's favorite performera photographing locationand concernetc.

[0070]The example of a ** type of the transmission signal of program related information is shown in drawing 9.

[0071]In order for what is necessary to be just to take the form where the program related information B1 or B-2 synchronizes with the program main information A in timeand does not necessarily need to be sent outand the time code t of the main information A can be quotedIf it precedes and program related information is sent out when performing catalog usebefore the main information A is broadcastit will also become possible to perform title search and variegated search will be realized. A_m of the graphic display to drawing 8 and B_m support program main information A_m and program-related-information B_m which were quoted by time code t_m in drawing 9. Although mentioned laterwhen indirect codes are transmitted from a broadcasting station as program related informationprogram-related-information B-2 of the program related information B1 is a case where program related information is directly transmitted from a broadcasting station.

[0072]If only the program main information cut (for examplecut A_m corresponding to t_m) to which the time code link t of drawing 9 attaches is saved at the program main information latch part 12 of drawing 1Since it is possible to specify and send out the most effective screen as a shopping catalog in the case of CM catalog by the CM offer or television station sidefor examplereducing the storage capacity of the program main information latch part 12the televiewer can acquire ideal catalog value.

[0073]A usage pattern like four kinds illustrated below as the method of catalog use can be considered.

1) Carry out the permutation of the program related information in accordance with search resultsand indicate by a catalog as it is.

2) Quote the program main information saved beforehand and indicate by a visual catalog.

3) Carry out the precede input of the search conditioncarry out catalog plastic surgery and display the program main information received after fixed time.

4) Carry out the precede input of the search conditionand when the program main information which showed sufficient similarity is receiveddisplay the purport that it is result corresponding informationand its information.

[0074]The procedure from the search condition input of four kinds of examples of use quoted here to each catalog creation is illustrated to drawing 10.

[0075]Firstwhen a search condition is specified at Step S1that specification which is precedence search or is a precede input is performed. When the specified search is precedence searchprogram related information is read at Step S8 within limits accumulated in the buffer of the indirect program-related-information storage parts store 3 of drawing 1 at Step S2step S9 compares similarityand the loop of the three steps of momentary preservation ** of a result is carried out at Step S10. If the end of buffer read-out is detected at Step S7the flash plate of the buffer will be carried out and it will progress to the displaying step in [A] a figure.

[0076]For plastic surgery of search resultsfirst of allin Step S11a loop is formed until it finishes processing the similarity comparison result saved at Step S6 or Step S10and read-out of the similarity of Step S12sorting of Step S13and preservation of the sorting results of Step S14 are performed. When it slips out of this loopthe permutation result of the similarity of program related information is obtained.

[0077]When search of 1 which is immediately asked for the display of a resultand 2 is chosenfrom Step S15it progresses to Step S18 and a permutation result is displayed as it is through Step S19 about 1. In the case of the search method of 2)the demand of a link with program main information is judged at Step S18the program main information accumulated in the program main information latch part 12 of drawing 1 at Step S20 is quotedand an image catalog is createdand after operating orthopedicallyit displays on the displaying means of Step S21.

[0078]When 3 or 4 search which carries out the precede input of the search condition is chosenjudgment of a precede input is received at Step S2and reception of program main information is continued. In the search method of 3)the loop which performs similarity comparison at Step S5 about the program main information which continued reception of

program main information at Step S3and was receivedand performs momentary preservation of a result at Step S6 is repeated until it detects a result output demand in step S4. Progressing to Step S11after slipping out of a loopthe rest takes the same flow as the search method 2. Following step S4 to Step S15 immediatelywithout forming a loopand supervising the flow of program main information at Step S16when the search method of 4 he would like to evoke whose attention one by one according to broadcast is specified. When reception (new reception) of the following program is startedit verifies whether a program corresponds to search results at Step S17and when it has similarity sufficient as search resultsthat is displayed on Step S21.

[0079]Thuscatalog use in various forms is attained using television broadcasting by this invention.

[0080](Example 4) Example 4 is an example using the remote control unit (remote controller) of a cable exchangeable to the input part of a search conditionand the outputting part of program related information or search resultsor radio.

[0081]An example of the remote control unit provided with the handwriting input device is shown in drawing 11. Since the remote control unit 21 side is equipped with the search condition input section 27 equivalent to the search condition input section 6 illustrated to drawing 1the televiewer can perform free search directionswithout being conscious of distance with a television set.

[0082]The display output at the time of using such a remote control unit 21 is explained. Catalog form which illustrated the display performed to the indicator 15 of the television set of drawing 1 to above-mentioned drawing 8 for exampleis held. When the program main information A and the program related information B as shown in drawing 12 are given herefor example only by the indicator 15 of a television set. Since the program related information B is piled up on the screen of the program main information A and it is displayed so that the screen of the program main information A may be reduced like drawing 8 or it may illustrate to drawing 13 for presenting of the program related information Bthe program main information which is original sources of information will be suppressedand a loss will be suffered in pictorial value.

[0083]CRT and LCD which are boiled as usual and with which a television set is provided in this example. On the main display 15 using an EL displayPDPa PALC displayetc.You make it stand in a row or pile each other upand with the remote control unit 21 which equipped drawing 11 with the bidirectional means of communication and information output means like a graphic displayit can divide or carry out multiplex and it

not only can displaybut can carry out output displaying to information output meanssuch as the sub display 27 with which the remote control unit 21 was equipped. Drawing 14 illustrates this concretelyand in the remote control unit 21it can check the program related information B with a handwithout barring the program main information A displayed on the main display 27 which a receiver has.

[0084]The example of important section composition of the television set containing the remote control unit 21 is shown in drawing 15. The portion surrounded by the dotted line is the indicator 15 currently explained by drawing 1and the display control part 14 of a body part operates orthopedically the information transmitted to the remote control unit 21 apart from the main display 24and outputs it to the transmitting and receiving controller 22. In the transmitting and receiving controller 22after performing suitable abnormal conditionsit is sent to the light-receiving-and-light-emitting part 23 which performs optical communications here. What used line telecommunicationan electric wavea sound waveetc. may be used for the communication between receiver-remote controls. The point is a block mounted in the remote control unit 21 sideand is recovered from the light-receiving-and-light-emitting part 23 by the transmitting and receiving controller 26 through the remote control unit side bearer light-emitting part 25 (decoding)and output displaying of the information is carried out to the sub display 27 with which the remote control unit 21 is provided.

[0085]At this examplethe remote control unit 21 side is provided only with the display sent from the receiver body part 20and the I/O function which outputs and inputs an eventand only raw data stream of the screen layout which constitutes a user interface fundamentallyand input and output is transmitted and received. For this reasonespeciallymounting to the remote control unit 21 does not need an expensive/advanced processing circuitbut can realize lightweight ****.

[0086]Although the sub display 27 by the side of the remote control unit 21 also has a function of the search condition input section 6 of drawing 1since search condition data is transmitted to the receiver body part 20 as it isa actual search service utilizes the arithmetic unit which the receiver body part 20 equips. Since the change state of the remote control unit 21 is also controllable integrative by the transmitting and receiving controller 22 of the receiver body part 20since it is [the autonomous function of the remote control for grasping statessuch as button grabbing] less necessarysetting out of flexible operating condition transition is attainedand it can also obtain a cost cut. Since expansion can also be performed in the receiver

body part 20it is also possible to hold high program inspection / search service extendibility.

[0087]From powering on to one retrieval processing is taken for an exampleand an example of the two-way communication sequence of the receiver body part 20 and the remote control unit 21 is illustrated to drawing 16.

[0088]Firstboth sides perform initial setting after starting in P1 and P2and 20 transmits a required top menu to the remote control unit 21 in the receiver body partP3. This top menu does not contain the retrieval processing script actually performed as above-mentionedand comprises only pointer information for starting each retrieval task. In response to the screen of the remote control unit 21P3it will be in the state waiting for directions from a userand the confirmation of receipt P4 will be simultaneously sent to the receiver body part 20. After checking the state of the remote control unit 21the receiver body part 20 once sleeps (only the display action of program main information is performed).

[0089]The coordinates which received directions from the user in P5 when the remote control unit 21 received the directions event more nearly required than a televiewerReturning the number of a button objector the event number assigned to the object to the receiver body part 20and waiting for the confirmation of receipt of P6an input is received and a check is shown to a user. If there is necessity after thatnon selection inputssuch as a sound and a handwritten inputwill be continuously received in P7 and P8. In response to the input of P5 or P7the receiver body part 20 performs retrieval processingand returns search results in P9.

[0090]After thatby P10the receiver body part 20 asks the waiting state of the remote control unit 21 for the search-results display verification of the remote control unit 21in order totransmit and receive required stream I/Ossuch as an audio streamin P11 subsequently to the remote control unit 21waiting and. If the reception waiting state of the remote control unit 21 is checked in P12a stream required of P13 will be outputted and processing will be ended. By performing such communicationthe remote control unit 21 can be used as a flexible search input/output device rather than taking the part of responsibility for the display instead of a mere button input device.

[0091](Example 5) The example in the case of giving a search condition in the form of [other than a text] is described below. In this inventionsince search which used indirect codes is performedthe gestalt of a search condition can take various input gestaltensuch as not only

the form of the text mentioned as the old example but a soundan illustrationetc.

[0092]The search condition input section 6 in drawing 1 is further explained in full detail to drawing 17. As a specification method of a search conditionthe thing using the sound type by the voice input means 33 besides the character type given by the alternative input means 31 or the pen point input means 32such as a keyboardand the illustration type by the illustration input means 34 is also mentioned. For exampleby voice inputa part of commercial song besides the words of a catch copyphrase hummingetc. deal with a continuity with drawingspicture cut faciesproduct faciestrademark faciesetc. in an illustration input.

[0093]Since it is an element from which a sound/image constitutes program main information in these casesit can change main information into the form of program related informationand after creating and attaching program related information separately beforehandit not only broadcastsbut can use it. Although the way the sound in program main information and pattern matching with each information on an image perform similarity comparison simply is mentionedthe example of handling of modes of expression other than a character type expression realizable by using indirect codes for below is explained.

[0094]First of allit is a case of a music input. For examplewhen the music element of "tempo" is observedsince the placebo effect which music gives is acceptedit can be said that "tempo" has a certain generality on a mental meaning. For this reasonif the coordinate system showing this mental meaning is projected in the same space as the indirect codes used with character type expressionthe indirect-codes system to "tempo" can be obtained. If the target music type coordinate system is set to h (y) and a character type coordinate system is made into f(x)they are h(y) =integralg (xy) and f(x)dx (10).

Although space projection is performed as be alikeHerefixed f (x_n)i.e.the method which approximates h (y) statistically from a correspondence relation with many character type expressionsis mentioned on the basis of the investigation which performs subjectivity evaluation about the representative point of the elements y (tempoa phraseetc.)and a test subject is made to do the free notationwithout asking for the projection function g (xy) directly. The "tempo" T is considered as the element y. The result of having performed subjectivity evaluation of the tempo Tm to 1000 test subjects with character type expression of "busy" "it being [that I am] active" 5 **["it is irritated"] ["was carried out calmly"] ["late"] [active] [it] "I being irritated" "late" 50% and 30% "carried out calmly" -- 10% and "animation -- it is -- " --

indirect-codes V_{Tm} given to the tempo Tm when it is 5% and "busy" 5% --
V_{Tm}=0.5xV(late)+0.3xV (calm)
+0.1xV(irritated)+0.05xV (it is active)
+0.05xV (busy) (11)
It is expressed.
[0095]That isalthough the mental meaning which each character type
expression has is only discrete one in indirect-codes
spacerespectivelysince indirect-codes space is space which expresses all
mental meanings continuouslyBy weight averaging using many character
type expressionsthe mental meaning of the representative point of a
music element is approximately guessable. Thusthe indirect-codes system
to music can be obtained by the method of investigating Tm at a detailed
stepand asking for the locus of T using a straight line or curve
approximation from typical Tm. How to give numerals based on prospective
knowledge is also considered from the explanation literature etc. which
described the auditory element already solved as what is replaced with
investigation of subjectivity evaluation.
[0096]Since similarity comparison can be performed on the same plat form
as the meaning-of-a-passage comparison by natural language if indirect
codes are similarly given not only about music but about all expressive
formit becomes possible to use for the search condition input of program
retrieving. By using the remote control unit 21 provided with a two-way
communication means which was indicated in the Example 4. From the
alternative input means 31 and the pen point input means 32such as a
keyboardthe voice input means 33and a variegated input means that was
illustrated in the illustration input means 34 grade. The high degree of
search flexible where it also becomes possible to exchange / choose
freely the input means which a televiewer tends to use and which does
not have it in the conventional retrieval device is realized.
[0097](Example 6) The data-broadcasting system shown in Example 1 has a
data-broadcasting track by a cable or radioin order to transmit program
related information required for a search means. As shown program
related information in Example 1after changing into indirect codes by
the broadcasting station side other than the method changed into
indirect codes by a receiver endthe method which broadcasts indirect
program related information may be sufficient as it. Thusif the
advantage which creates indirect program information by the broadcasting
station side uses indirect codes for distribution of the information
which made meaning of a passagesuch as an outlinethe subjectin order
that indirect codes may eliminate an attached word and may merge
duplication of a meaningetc.they will realize communication of the low

bit rate which excluded the redundancy of language.

[0098]About the broadcasting system which transmits after creating indirect program related information by the broadcasting station sidethe example of the broadcasting station side and a receiver end is shown in <u>drawing 18</u>.

[0099]The system by the side of the broadcasting station X is explained first. Program main information may be sent out according to the schedule instructed to be a case where the manufacture program 44 is sent out in real time by the broadcast schedule input part 41 from CM bank 43 or the manufacture program 44 by which record accumulation was carried out. In these two caseshand control is received by the transmission control section 42they receive sending control with an automaticand it is sent out according to a synthetic program schedule. The broadcast information by which permutation was carried out to time by the transmission control section 42 is changed into the desired signal for broadcast in the video-signal work part 45and is sent to the inserter 50.

[0100]On the other handalthough program related information is inputted by the program-related-information input part 46The broadcasting station side is equipped with the same indirect-codes conversion method as the parameter adaptation-ized part 4 of <u>drawing 1</u> explained in Example 1and the code translation table 5and when it passes along the indirect program information preparing part 47 by this exampleconversion to indirect program related information will be substituted for it. The created indirect codes are changed into the form which control of transmission timing is performed by sending-out management / control section 38and can be superimposed on program main information by the modulator / abnormal-conditions control section 49. In the case of an analog transmitterin the case of an inserter and a digital transmission machineit is mixed by the multiplexer 50and program main information and program related information are sent out after obtaining the electric power for transmitting by a power amplification section.

[0101]In the receiver Y sidethe sent-out broadcast is received and a demodulation section or the demultiplexer part 52 separates into program main information and indirect program related information. While the received indirect program related information is saved as it is at the indirect program-related-information storage parts store 3it is held temporarily at the latch part 53 equivalent to the program-related-information latch part 9 in <u>drawing 1</u>. When the program under viewing and listening is specified from the video-signal synchronizer (catalog preparing part) 13what is equivalent to a program during viewing and

listening from the indirect program related information held at the latch part 53 is selectedand it is sent to the indirect search condition storage parts store 8 as it is. When the parameter adaptation-ized part 4 and the code translation table 5 synchronize fundamentally the broadcasting station side and the change corresponding to fashion etc. is added by the broadcasting station X sideit is told to the terminal side at any time using broadcast/means of communicationand the synchronization of the contents is measured. Operation of subsequent receivers is fundamentally the same as Example 1.

[0102]The center portion B1 of <u>drawing 9 </u>mentioned above expresses the indirect program related information sent out from the transmission system explained by <u>drawing 18 </u>(right B-2 shows casessuch as character type information of the former [program related information]). In the case of the center B1it can count upon reduction of processing of a terminal with the fall of transmission quantity as above-mentioned (processing needlessness of the indirect program information preparing part 2 of <u>drawing 1</u>)Since an inspection can also realize the text of program related information by sending out both sides simultaneously when sufficient zone for broadcast can be securedthe system configuration which suited the scale of the broadcasting station can be chosenand a flexible program retrieving method is provided at high speed.

[0103]Since a linguistic barrier is eliminated by using indirect codesif indirect codes are created by the broadcasting station sideIf the terminal carrying the code translation table 5 which comprised a language which does not need to give two-language correspondence of broadcast language and televiewer using language to the code translation table 5 of a receiver end as stated to Example 1and a televiewer uses from the beginning is purchasedIt becomes possible to use the program retrieving by this inventionand can count upon the further ** cost.

[0104]
[Effect of the Invention]By as mentioned aboveintroduction of the integrative information expression using the indirect codes by this invention. A flexible search means gentle to a televiewer to acquire desired information can be provided only by giving a near search condition semantically in the program retrieving of the television broadcasting which was retrieving information by a retrieval objectcompletenessor deterministic-retrieval conditions that carry out match partial conventionally. . It can refer to this inventionwithout expanding the width of the condition form of search andfor exampleperceiving temporal meaning changes of a vocabulary explicitly. The television broadcasting which has an advantage of many -- that it

can respond to a foreign languagewithout modifying program related information and laborsaving can perform foreign country language correspondence of contents manufacture further -- is realizable.

[0105]In the television advertisement which was able to take only the form that this invention was conventionally bound to short-time restriction and time-axis againi.e.CMThe positive and utilizing means of the information by the side of a sponsor's propaganda effect improvement or a televiewer to know useful for optional reception is providedand a new visual catalog function can be provided.

[0106]In the case where the program main information broadcast as a subject of television broadcasting is searched according to this invention especially indicated to claim 1 or 7It can search by the ability giving from said program main information or program related informationand a televiewerand change a **** search condition into the indirect codes expressed in the same spaceand can cater to a televiewer's flexible retrieval required to various kinds of television broadcasting.

[0107]According to the invention according to claim 2the cut rate which is interlocked with the subject mainly dealt with within a main programand changes can be usedfor example as a selection item of a catalog inspection by giving the scene of a television imageor a cut to a unitand sending out program related information.

[0108]By carrying out addition sending out by making into program related information the data of the form which meant carrying out catalog use of CM in addition to this editing in CM currently expressed only by having had an image and a sound in within a time [which was limited] according to the invention according to claim 3the condition selection of the catalog use which obtains selectively the information which did not secure an information transmission track separately by the television set side butto which ** also met the use demand by the side of a televiewer is given -- things can be carried out.

[0109]By it not only always preceding and specifying a search conditionbut according to the invention according to claim 4specifying the main program under viewing and listening which acquired concern as a search conditionwhen performing program retrieving. By transposing to a search condition with the program related information accompanying the specified main programthe time and effort of the input of a search condition can be savedand the intuitive search and a chain of search which cannot be expressed verbally can be performed.

[0110]When expressing semantically the search condition and program related information which were given by the televiewer according to the

invention according to claim 5For exampleby reexpressing both sides using the interim indirect codes expressed as natural language with special objective meaning coordinatesThe physical relationship of the meaning of a passage not only in the relation between each vocabularies used for expression of a search condition or program related information but the whole language is expressed systematicallyand similarity can be measured.

[0111]The program main information currently outputted to the display with which a receiver body is provided by displaying a program retrieving result here using a remote control unit according to the invention according to claim 6It can perform performing information input and output of program retrieving with a handwithout checking each informationincluding setting out etc.in program related information and its end of the other end.

[0112]If the indirect-codes system which can express a meaning intensively by sending out after changing program related information into indirect program related information is set up moderately according to the invention according to claim 8data transmission in the low amount of information which excluded natural language redundancysuch as an attached word and a conjugational suffixfor example can be performed. Since the processing which changes program information into indirect program information is completed at the time of a broadcasting stationSince the processing burden of the search performed with a receiving system is reducedaccording to the invention according to claim 9 which can reduce the cost of a receiving systemby changing program related information into indirect program related information by the television receiver sideThe broadcasting station can realize flexible search to various kinds of television broadcasting only by giving program related information to program main information. Program retrieving suitable for an individual can be performed by obtaining the indirect codes amended using the code translation table which introduced the televiewer's taste etc. for every television receiver.

[0113]According to the invention according to claim 10even if program related information is givenstill higher search capability is realizable by changing program main information into the form which can be used for program related informationand using it complementarily by the receiving system side.

[0114]By authorizing the program related information given to the purpose of carrying out catalog use of the programand the search condition given to catalog search using the similarity between indirect codes according to the invention according to claim 11For exampleeven if

it does not give search conditionssuch as a title in which it is difficult to memorize all correctlya subject namea scene namea cut name which a televiewer cannot know conventionallywith all the coincidence or expression which carries out match partialthe function flexibly searched using a retrieving person's (televiewer) expression can be provided.
[0115]By authorizing the program related information given to the purpose of carrying out catalog use of the television advertisement (CM)and the search condition given to catalog search using the similarity between indirect codes according to the invention according to claim 12For exampleeven if it does not give search conditionssuch as a product namewith all the coincidence or expression which carries out match partialthe function to perform catalog creation flexibly using a retrieving person's (televiewer) expression can be provided. The catalog function to refer to it and to use the broadcast of CM in which permutation is intentionally carried out to the time series by the reason for a background by the side of a broadcasting station at any time with the permutation which met the use demand by the side of a televiewerfor example is also realizable with a receiving system machine.
[0116]Only by adding as difference the conversion rule or translation table which expressed the strange word by indirect codes to the conversion rule or translation table which changes into indirect codes the language which describes the natural language which gives a search condition etc.and program related information according to the invention according to claim 13It can respond to the appearance of a strange wordwithout adding a large change to a conversion method.
[0117]According to the invention according to claim 14the value of the conversion rule or conversion parameter which changes into indirect codes the language which describes the natural language which gives a search condition etc.and program related information by changing at any time. Unsuitable code translation is corrected and realization of the function to adjust operation of search in the more suitable state is attained.
[0118]The indirect-codes conversion rule which is brought about by the parameter adaptation-ized means of claim 13 or 14 according to the invention according to claim 15In this searchalways suitable program retrieving can be provided by using for the purpose of correcting code translation distortion which produced the regulation function of the translation table or the conversion parameterfor example according to the appearance of the Niide languageaging of a meaningregionalitythe user generationthe difference of cultureetc.
[0119]Since search uses comparison of the meaning of a passage described

by systematic indirect codes without using the semantic combination between direct languages according to the invention according to claim 16similarity can be measured objective and quantitatively and the permutation of search results can be performed uniquely.

[0120]In the case where the program main information broadcast as a subject of television broadcasting is searched according to the invention according to claim 17By expressing semantically the search condition given by the televiewer using indirect codesEven if completeness or expression which carries out match partial does not exist in program main information or the information given to the electronic program guidethe television receiving system for catering to the flexible retrieval required of the televiewer who does the permutation of the similar information using similarity can be provided.

[0121]When program related information is already prepared for the program manufactured overseas etc. according to the invention according to claim 18even if the retrieving person (televiewer) is not well versed in the language concerneda flexible search can be freely performed by having a conversion method which changes both sides into the same indirect codes. The time and effort which performs translation in the single or multiple language used in domestic [which furthermore broadcasts to the broadcasting station side] can be savedand broadcast by low cost can be realized.

[0122]According to the invention according to claim 19the search condition used for program retrieving is not what can be expressed only in the language used for conversation or text descriptionBy making it possible to illustrate and express the mimicry soundscore informationand image facies which express music on humming etc.and comparing in the same indirect-codes space built so that each semantic relation could be reflectedExpression for which it was not concerned with the classification of the gestalt of the search key which a retrieving person hasbut was most suitable can be added and searched.

[0123]According to the invention according to claim 20the character from the television receiver sideA hand can perform information input and output of program retrievingwithout checking the program main information etc. which are outputted to the display of the receiver using the remote control unit which downloaded a picturelayout informationetc. and was provided with the two-way communication function in which image display is possible.

[0124]In the case where the program main information broadcast as a subject of television broadcasting is searched according to the invention according to claim 21By expressing semantically the search

condition given by the televiewer using indirect codesEven if completeness or expression which carries out match partial does not exist in program main information or the information given to the electronic program guidethe television transmission system for catering to the flexible retrieval required of the televiewer who does the permutation of the similar information using similarity can be provided.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is an important section block diagram showing the example of composition of the television set in one example of this invention.
[Drawing 2]It is a figure explaining the example of a search inputand the example of generation of the indirect-codes sequence.
[Drawing 3]It is a figure which illustrates some indirect-codes translation tables which describe the word in the natural vocabulary used for searchand the conversion rule of indirect codes.
[Drawing 4]It is a figure showing the example of application to English of an indirect-codes translation table.
[Drawing 5]It is a ***** figure about the parameter adaptation operation to aging of the meaning which an entry has.
[Drawing 6]It is a figure showing typically the distance between numerals in indirect-codes space in three-dimensional space.
[Drawing 7]It is a figure showing typically distance comparison in the indirect-codes space in consideration of starting receptacle relations.
[Drawing 8]It is a figure showing the display example of catalog use.
[Drawing 9]It is a figure showing typically the relation of broadcast between program main information and program related information.
[Drawing 10]It is a flow chart which shows the procedure of an example of realizing catalog use.
[Drawing 11]It is a figure showing the remote control unit which equipped the handwriting pad.
[Drawing 12]It is a figure showing the example of the group of program main information and program related information.
[Drawing 13]It is a figure explaining the display example which search results display on one screen.
[Drawing 14]It is a figure explaining the display example which search results display using the remote control unit provided with the subdisplaying means.
[Drawing 15]It is an important section block diagram explaining the

example of composition of the remote control unit provided with the two-way communication means.

[Drawing 16]It is a figure showing an example of the two-way communication sequence between a receiver body part and a remote control unit.

[Drawing 17]It is a block diagram showing one example of the search condition input means which can change an input means selectively.

[Drawing 18]It is a block diagram showing the system which generates and receives [broadcast and] indirect program related information.

[Description of Notations]

1 Program-related-information receive section

2 Indirect program-related-information preparing part

3 Indirect program-related-information storage parts store

4 Parameter adaptation-ized part

5 Code translation table

6 Search condition input section

7 Indirect search condition preparing part

8 Indirect search condition storage parts store

9 Program-related-information latch part

10 Similarity comparison-operation part

11 Program main information receive section

12 Program main information latch part

13 Image synchronizer (catalog preparing part)

14 Display control part

15 Indicator

20 Receiver body part

21 Remote control unit

22 Transmitting and receiving controller (receiver body part side)

23 Light-receiving-and-light-emitting part (receiver body part side)

24 Main display

25 Light-receiving-and-light-emitting part (remote control unit side)

26 Transmitting and receiving controller (remote control unit side)

27 Sub display

31 Alternative input partssuch as a keyboard

32 Pen point input part

33 Voice input part

34 Illustration input part

35 Similarity comparison unit-selection part

41 Broadcast schedule input part

42 Broadcast image creation / transmission control section

43 CM bank

44 Work program
45 Broadcast video-signal preparing part
46 Program-related-information input part
47 Indirect program-related-information preparing part
48 Sending-out management / control section
49 A modulator/control section
50 An inserter or a multiplexer
51 Power amplification section
52 A demodulation section/demultiplexer part
53 Latch part
A Program main information
B Program related information
B1 Indirect program related information
B-2 Character type program related information
X Broadcasting station
Y Receiver